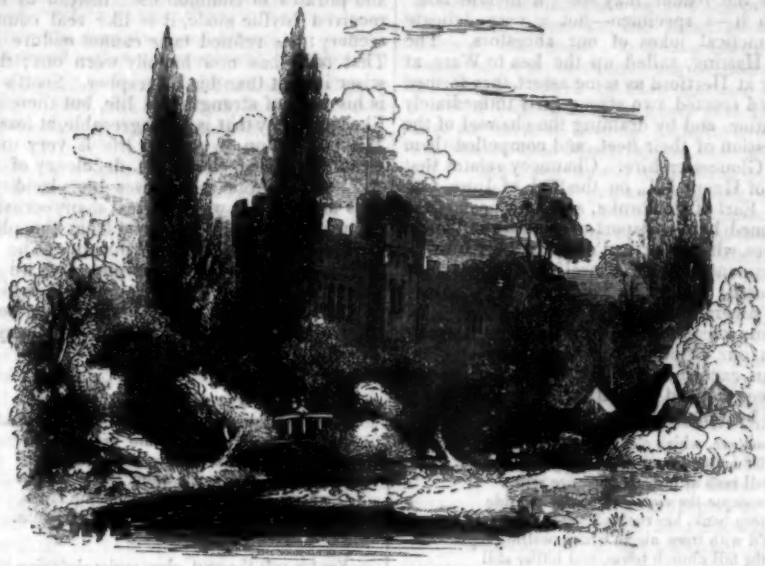


[Hertford Castle.]

RAMBLES FROM RAILWAYS.

The Lea.—No. III.

Hertford is a busy, respectable town; it has a bustling appearance on a market-day, and still more at assize times. There is much of historical interest attached to the town, yet it has few historical relics. The castle, which is almost the only one, it has been said was erected by Alfred, but it is far more probable that it was built about 909 by Edward the Elder, who is also reported to have rebuilt and fortified the town, which had been destroyed by the Danes. Hertford is supposed to have been a principal residence of the East Saxon kings. When the Dauphin Louis contested the English throne with King John, Hertford castle was stoutly defended on behalf of the king by Godarvil, who however was at last forced to capitulate. Edward II., in 1345, gave the castle to John of Gaunt for his residence; and while he held it, John, king of France, and David, king of Scotland, were prisoners in it. At the time of the deposition of Richard II., Henry, the son of John of Gaunt, held his court in the castle. Several succeeding monarchs occasionally resided in it: among others Queen Elizabeth; and a small chamber is shown in the highest tower as the place of her captivity. There is, however, no evidence, beyond the tradition, to prove that she ever was confined in it: probably the tradition arose from the circumstance of her having dwelt there. There is little remaining of the ancient castle, the only portions being some of the outer walls, and two or three towers with a few chambers attached. These are of brick, and in tolerable preservation, though not in the original state, they having been repaired and fitted up as a residence. Our engraving of it is from a sketch taken from the Lea, which flows below it. In the grounds of the castle are a couple of Lombardy poplars of unusual size and beauty.

Hertford was, in 1647, the head-quarters of the Parliament army; and it was here that the mutiny of Lilburne's regiment occurred, which at first threatened to be fatal to the Parliament cause. Cromwell, however, by one of those prompt acts that were so natural to him, averted the danger. Directly the mutiny broke out, he removed the army to Ware, and having, on addressing the troops, discovered that the disaffection was confined to one regiment, he at once surrounded it, and took measures to render its resistance unavailing. He then called a council of war, and having seized the ringleaders, three were condemned to death, and from them one was chosen by lot and instantly shot at the head of his regiment, the others being retained in the hands of the marshal as security for the obedience of the remainder of the regiment.

The neighbourhood of Hertford yields an agreeable variety of pleasant walks. The banks of the Lea, between it and Ware, cannot however be greatly praised for their beauty: at any rate we need not linger beside them, as we shall soon reach some of a pleasanter and, from various reasons, more interesting character. We may, however, just notice that Chadswell Springs, which form the source of the New River, by means of which so large a portion of London is supplied with water, are situated in the meadows about midway between Hertford and Ware, nearly opposite Ware Park, and at a short distance from the banks of the Lea. The site of the principal spring is marked by a stone, erected by the New River Company, which informs us that it was opened in 1608, and that the water is conveyed forty miles. From the spring the water flows into a circular basin, surrounded by a light wooden railing, and thence into a channel, which, having been swelled by some cuts from the Lea, runs for several miles parallel to that river.

Ware is an ancient town, being mentioned in Domesday-book, and has all the old-fashionedness that might be expected from its antiquity; yet there is nothing of consequence to notice in it. The houses are none very remarkable, nor are there any remarkable remains: indeed what chiefly attracts the attention of a stranger is the number of malt-houses it contains, and they are not very ornamental. On the banks of the Lea, a short distance from the church, are some portions of a priory that belonged to a body of Benedictines, who were subordinate to the Abbey of St. Ebrulf, at Utica in Normandy. There is a large bed, twelve feet square, at one of the inns, but it is not the veritable "great bed at Ware" that Shakspere mentions. That, however, we believe was in existence not many years back; it is referred to in all the histories of Hertfordshire, and in

old Chauncey's the reader may see "a merrie tale" connected with it—a specimen—not a very delicate one—of the practical jokes of our ancestors. The Danes, under Hasting, sailed up the Lea to Ware, at which place, or at Hertford as some assert, they formed a camp. Alfred erected two strong forts immediately below their station, and by draining the channel of the Lea, got possession of their fleet, and compelled them to retreat into Gloucestershire. Chauncey relates that "in the 25th of Henry III., on the 27th of June, Gilbert Marshall, Earl of Pembroke, a potent peer of the realm, proclaimed here a disport of running on horseback with lances, which was then called a tournament." At this tournament Gilbert himself was killed by a fall from his horse; Robert de Say, one of his knights, was slain, and several others were wounded.

Following our stream we soon reach Amwell, whose hill, rising on our right and crowned with the old church, has an exceedingly picturesque appearance. Amwell has been noticed by Walton, and celebrated in pleasant verse by John Scott:—

"The pleased eye, which o'er the prospect wide
Has wander'd round, and various objects mark'd,
On Amwell rests at last, its favourite scene.
How picturesque the view! where up the side
Of that steep bank, her roofs of russet thatch
Rise mix'd with trees, above whose swelling tops
Ascends the tall church tower, and loftier still
The hill's extended ridge."

Scott of Amwell, as he was called, like many another poet of celebrity in his own day, is slipping out of memory now: a few words about him will not therefore be out of place in connection with the spot so closely associated with his name. John Scott was born in Bermondsey in January, 1730, and succeeded early in life to some property in Amwell, where he fixed his dwelling, and, excepting some portion of each year spent at a house he had in London, continued to reside there till his death, which occurred in December, 1783, at his London residence. His parents were members of the Society of Friends, in which communion he remained during his life; forming therefore one of the very small fraternity of Quaker poets. Dr. Johnson, who esteemed him highly, undertook to write his life, but his own death prevented the accomplishment of his purpose. It was afterwards written by Hoole, the translator of Tasso; but it is utterly devoid of interest, for his life ran "smooth as his verse:" like Goldsmith's Vicar, all his adventures were by the fire-side, and all his migrations from the blue bed to the brown, or, in Quaker speech, from his country house to that in town. He was possessed of a fine intellect, though wanting that something which constitutes genius in the man, and can alone impart vitality to his verse. By his contemporaries he was thought highly of, and will be read with pleasure now by those who meet with his works and can listen to the melody of the oaten pipe. One at least of his smaller poems will retain a place in the collections:—

"I hate that drum's discordant sound
Parading round, and round, and round.
* * * * *
To me it talks of ravaged plains,
And burning towns, and ruin'd swains,
And mangled limbs, and dying groans,
And widows' tears, and orphans' moans," &c.

His poetry is nearly all of the "pastoral" kind, and has the smoothness and neatness, the facile flow, and something of the "refined rusticity" that ought to characterize productions of that class. But there is an absence of human character and interest that soon renders the sweetest pastoral poetry wearisome. Hoole objects to the introduction of so many of the words and phrases in common use; instead of being in the received Idyllic mode, it is like real country life and scenery: his refined taste cannot endure its rusticity. That taste has now happily worn out; the poet was wiser in that than his biographer. Scott's great defect is his want of strength and life, but there is a Quaker-like simplicity that is very agreeable, at least for a while. His conception of country life is very unlike that of Crabbe—indeed there is a deficiency of nerve in almost all he wrote that causes his placidity and sweetness to cloy. He wrote a great many occasional pieces; his principal work is named from the place that has caused this digression—Amwell. The view from Amwell-hill is a very fine one, and we gladly avail ourselves of Scott's description of it, which will serve as a sample of his descriptive style, and be more pleasing, we are sure, to our readers than any account we could give of the prospect:—

"How beautiful,
How various is yon view! delicious hills
Bounding smooth vales, smooth vales by winding streams
Divided, that here glide thro' grassy banks
In open sun, there wander under shade
Of aspen tall, or ancient elm, whose boughs
O'erhang grey castles, and romantic farms,
And humble cots of happy shepherd swains.
* * * * * *
Far towards the west, close under shelt'ring hills
In verdant meads by Lea's cerulean stream,
Hertford's grey towers ascend; the rude remains
Of high antiquity, from waste escap'd
Of envious time and violence of war."

The church is a pretty building, and altogether the place would be very pleasing even without its associations. It is mentioned in Domesday-book under the name of Emme-well, and has been thought to derive its name from a well at the foot of the hill called Emma's-well, which now forms a part of the New river. At Amwell the New river is a little better looking than elsewhere; its banks are planted with some fine willows and a little islet adorns the stream. On the isle is a stone with an inscription, referring to the well, by Scott, and the island is mentioned by him in his poem of Amwell:—

"Slow beneath that bank the silver stream
Glides by the flowery isle, and willow groves
Wave on its northern verge, with trembling tufts
Of osier intermixed."

"On the hill above the church are traces of a very extensive fortification [Qy. that above referred to], the rampart of which is very distinguishable on the side overlooking the vale through which the river Lea flows. In this parish also, on the side towards Hertford, is *Barrow field*, wherein is a large tumulus; and not far distant are remains of an ancient road, probably of Roman origin."* These the visitor will discover readily enough, and altogether he may spend an hour or two at Amwell very agreeably.

[Chadswell Springs.]

* Brayley

LORENZO DE' MEDICI.

"The magnifico is well beloved,
And hath in his effect a voice potential."—*Othello.*

The term 'magnifico,' which in Italy, as Shakspere seems to have known, was frequently applied to noble or rich men who had great influence in the state, has become the distinguishing epithet of Lorenzo de' Medici, as peculiarly appropriate to his princely qualities, to the extensive reputation which he acquired, and to the political power which that reputation gave him, not only in Florence, but throughout Italy. To all who are acquainted with the history of those times he is now as well known by the appellation, 'Il Magnifico Lorenzo' (Lorenzo the Magnificent) as by that of Lorenzo de' Medici.

Lorenzo de' Medici was born January 1, 1448. His father, Piero de' Medici, the son and successor of Cosimo, married Lucrezia Tornabuoni, of a citizen family, but one of the most accomplished women in Florence, and distinguished as a poetess. Giuliano de' Medici, Lorenzo's younger brother, was born in 1453.

Cosimo de' Medici died in 1464, and his son Piero then became head of the Medici family, and actual governor of the state of Florence. Piero was always of weak constitution, and the infirm state of his health rendered him little fit to undergo the vigilant superintendence requisite to keep in check the turbulent Florentines; but he was a well-meaning and prudent man, and availed himself of the talents and activity of his son Lorenzo, who, though only sixteen years of age at the death of his grandfather Cosimo, was well qualified to render important assistance to his father. Lorenzo's intellect was naturally of the highest quality; he had been instructed in classical learning by the first scholars of the day; his political education had been conducted under his grandfather and his father; his skill in poetry and taste in the fine arts had been early developed under the guidance of his mother; he was very tall and robust, and delighted in country sports; and was trained under the first masters in all the personal accomplishments and military exercises which were deemed essential to expand to its full perfection the character of one who was likely to become the head of the most influential family in Florence and the actual ruler of the state.

After the death of Cosimo, Lorenzo was sent by his father to visit the different courts of Italy. In 1466, some time after his return, the family of Acciajuoli entered into a conspiracy with Luca Pitti and others to assassinate Piero, and wrest the government of the state from the hands of the Medici while his sons were yet too young to offer any effective opposition. The conspirators engaged a body of thirteen hundred cavalry to enter the territory of Florence. Piero, when informed of this demonstration, was at his country house at Careggi, and was suffering so severely from gout as to be unable either to walk or ride, but directed his attendants to bear him in his chair to Florence. Lorenzo, who had left Careggi a short time before his father, met with armed horsemen on the road, who appeared to be in wait for some one. Suspecting their intentions, he immediately despatched an attendant to direct his father to proceed to the city by a circuitous and unfrequented road; Lorenzo himself went forward by the direct road, and informed those who inquired after his father that he was following at a short distance. Lorenzo's promptitude probably saved his father's life and destroyed the conspiracy. The whole intrigue was discovered. Luca Pitti deserted and betrayed his associates. The chief members of the Acciajuoli family were sentenced to banishment. Luca Pitti, on account of the disclosures which he had made, was not included in the sentence, but the reputation in which he had lived under Cosimo, to whom he had acted as a sort of prime minister, was gone. Two magnificent palaces, both designed by Brunelleschi, one outside the gate of San Niccolo, the other in Florence, and still famous as the Pitti palace, were in great part built during the administration of Cosimo. After the disclosure of his conduct in this affair, the work of the Pitti palace, which had been mostly performed by the voluntary contributions and gratuitous labour of the citizens, ceased, and the rest of his life was passed in the obscurity and contempt due to ingratitude and treachery.

Piero de' Medici died Dec. 2, 1469, in his fifty-third year. Lorenzo was then twenty-one years of age and Giuliano sixteen. Two days after this event the principal inhabitants of Florence came to Lorenzo's house to offer their condolence, and to request him to take on himself the care of the state, and to be, as his grandfather and his father had been, a bond of union to the citizens and security to the city; a charge which, after some professions of reluctance on account of his youth, he undertook.

At the time of Piero's death the Florentines were at peace. Of the other states of Italy, Venice was the most powerful, and was governed by its doge and senate; Naples was ruled by its king, Ferdinand of Aragon, who had succeeded his father Alfonso in 1458; Galeazzo Maria, son of Francesco Sforza, held the state of Milan as duke, to whom Genoa was also subject; Paul II. filled the papal chair and governed the states of the church; Borso d'Este was marquis of Ferrara; Sienna and Lucca were free cities with an independent government.

Florence continued to be peaceful and prosperous. As Giuliano was only sixteen years old at the death of his father, the administration of public business for some time rested entirely upon Lorenzo; but as the brothers had been brought up in the same studies, had partaken of the same amusements, and there subsisted between them the warmest friendship, Giuliano gradually became his brother's coadjutor, and his gentle and amiable manners made him a favourite with all ranks.

The pope, Paul II., a profligate and illiterate priest, between whom and the Medici there subsisted an irreconcilable enmity, died July 26, 1471, and was succeeded by Sixtus IV., who proved to be even more unprincipled and rapacious than his predecessor. Lorenzo, at the head of six of the principal citizens of Florence, was deputed to congratulate him. Lorenzo had a bank at Rome, which was managed by his maternal uncle Giovanni Tornabuoni as agent. The pope appointed Lorenzo treasurer of the Holy See, and his uncle of course acted as his deputy.

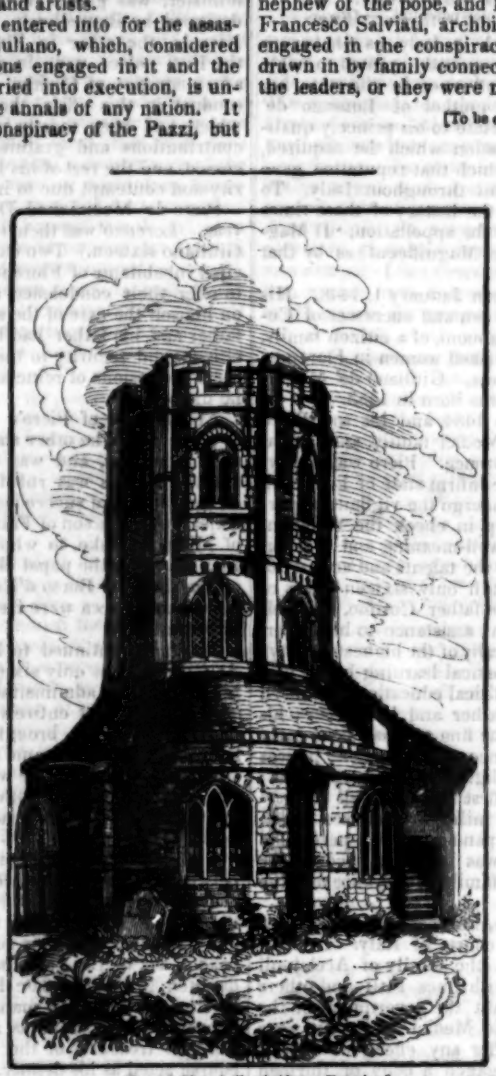
In 1472 Lorenzo repaired to Pisa, for the purpose of re-establishing the university, which had for some time been neglected, and had fallen into disrepute. In 1473 he was engaged by Louis IX., king of France, in negotiating a marriage between the dauphin and the daughter of the king of Naples, who, however, refused to accede to the wish of the French king. Soon afterwards he incurred the enmity of the pope by lending his aid to Niccolo Vitelli, who was lord of Castello, which town Sixtus endeavoured to obtain by force, and ultimately succeeded. In order to resist more effectively similar aggressions in future, Lorenzo in 1474 organized a league between the duke of Milan, Venice, and Florence; the consequence of which was that the pope was still more incensed, and not only deprived him of his office of treasurer of the Holy See, but became ever afterwards his most inveterate enemy.

Lorenzo de' Medici thus continued, with the assistance of his brother Giuliano, to conduct prosperously the affairs of the state of Florence, and to occupy his

leisure with the study of the philosophy of Plato, the composition of Italian poetry, and the conversation and society of learned men and artists.

In 1478 a conspiracy was entered into for the assassination of Lorenzo and Giuliano, which, considered with reference to the persons engaged in it and the manner in which it was carried into execution, is unparalleled for atrocity in the annals of any nation. It is generally known as the conspiracy of the Pazzi, but in fact the instigators and leaders of it were Francesco de' Pazzi, the Pope Sixtus IV., Count Girolamo Riario, nephew of the pope, and lord of Imola and Forli, and Francesco Salviati, archbishop of Pisa. Others were engaged in the conspiracy, but they were apparently drawn in by family connection and by the influence of the leaders, or they were mere hired agents.

[To be continued.]



[Round Church Cambridge,—Exterior.]

THE ROUND CHURCH AT CAMBRIDGE.

THE church of the parish of the Holy Sepulchre, or St. Sepulchre, as it is called, is one of the very few churches built in a circular form, and is the oldest of those erected in England, exhibiting a very curious specimen of ancient architecture. It is 41 feet in its internal diameter, and has a peristyle of eight clumsy pillars supporting circular arches with chevron mouldings. The upper story of the tower and the square part of the east end are Gothic. Churches of this form have been usually attributed to some connection with the Knights Templars; but it is alleged in this case that it was consecrated in the year 1101, or several years before the institution of the Order of Knights Templars; so that it can hardly be attributed to them. In a paper recently read before the Camden Society, the church is supposed to have been founded by some one interested in the recovery of the Holy Sepulchre at Jerusalem,—hence the imitation of the form of that building, and the name; and that the object in view was to make provision for constant prayers for the success of the crusaders. We learn from the same pages some other interesting matters. The parish has been traditionally known as the Jewry, which designation it is supposed was given to it in consequence of the model of the most sacred of Jewish structures being placed in it. The stained glass votive window, with a saintly figure, which attracts the eyes of visitors in the restored Church, it appears preserves the memory of Bede's legendary residence in the vicinity. It had been long neglected, and was in a very dilapidated state, when fortunately the better taste that has been recently evinced for the preservation of our national monuments directed attention to it, and, following the laudable example set by the Templars in their restoration of their beautiful church, a local committee undertook to effect a similar restoration for this the most

interesting antiquity of their town. Of their labours on this important structure it is hardly possible to speak too highly. The entire funds, with the exception of some 1600*l.* still required, have been raised by voluntary subscription, and expended by a little band of ardent and reverential lovers of all that is antique, grand, or beautiful in our ecclesiastical architecture. The Camden Society especially stands conspicuous in the good work, which has been carried on, we are sorry to learn, through "repeated interruptions and obstructions," and which has—a common case—proved a much more elaborate and costly task than was anticipated. The substantial reparation of the decayed fabric was the object the committee set before themselves; and, much as these words include, it seems that they have found it necessary to add the enlargement of one aisle, the entire erection of another, a new bell-turret, "breaking up the unsightly uniformity of the rest of the building," the entire fitting of the church with open seats and other necessary furniture in carved oak, and lastly, the beautiful east window. They have thus involved themselves in debt to the amount before stated, but we do not think they will have relied in vain on the public sympathy and assistance. The stately solemn-looking fabric, so eloquent of those mighty primeval artists, those architectural giants of our early history, who "dreamt not of a perishable home" when they dedicated their skill and cunning to the service of the Almighty, appears again fresh as it were from their very hands. The restoration was completed and the church given up to the parish authorities on the last day of the year 1843, since when, we are sorry to say, there has been a warm attack on the orthodoxy of the style in which the repairs have been performed. Into the merits of this dispute we do not mean to enter; but regret that any dissatisfaction should have arisen, as it will probably throw impediments in the way of its completion. Both our views show the church in the state previous to its renovation.

[Round Church, Cambridge.—Interior.]

THE FERTILIZATION OF LAND BY WARPING.

There are some counties of England so peculiarly situated with respect to the level of the sea, that the agriculturists can adopt a mode of enriching their land quite unavailable in those counties of a higher general level. Tracts which at first sight seem to be especially unfavourable, acquire by the very circumstance which gives them this unfavourable appearance a power of fertilization quite remarkable. It is to the system of *warping*, as practised in Yorkshire and Lincolnshire, that we here allude.

When a river flows through a country whose general level is below that of high tide, and the water of the river is of very muddy character, the operation of warping can then be carried out. It consists in allowing the water to flood the land at low tide by artificial channels and sluices, and retaining it there so that it may deposit the mud which had been suspended in it. This mud consists of various kinds of earth mixed with portions of vegetable and animal matter. New portions of water are admitted at every high tide, and these in like manner deposit their sedimentary matter. Each tide thus forms a new stratum; and in some places it is found that a layer one-tenth of an inch in thickness is deposited at each tide, amounting to nearly an inch and a half in a week. Thus in the course of a few weeks a new soil is created several feet in thickness, solely by the operation of this deposit of warp; and not only so, but the warping fills up all inequalities, and a perfectly level surface is produced. The land thus warped is said to possess a natural power of production which cultivation and manuring cannot imitate.

Such is the meaning of the process of *warping*. It is said to have been first tried in this country on the banks of the Humber about a century ago, but was first brought prominently into notice by Marshall in 1788: it has, however, been long known in Italy. Mr. Cadell, in his 'Journey in Carniola,' gives the following account of what came under his notice in reference to this matter:—"In the Val di Chiana fields that are too low are raised and fertilized by the process called *colmata*, which is done in the following manner:—The field is surrounded by an embankment to confine the water. The dyke of the rivulet is broken down so as to admit the muddy waters of the high

floods. The Chiana itself is too powerful a body of water to be used for this purpose; it is only the streams that flow into the Chiana that are used. This water is allowed to settle and deposit its mud upon the field. The water is then let off into the river at the lower end of the field by a discharging course called *scolo*, and in French *canal d'écoulement*. The water-course which conducts the water from a river, either to a field for irrigation or to a mill, is called *gora*. In this manner a field will be raised five and a half, and sometimes seven and a half feet in ten years. If the dyke is broken down to the bottom, the field will be raised the same height in seven years; but then in this case gravel is also carried in along with the mud. In a field of twenty-five acres, which had been six years under the process of *colmata*, in which the dyke was broken down to within three feet of the bottom, the process was seen to be so far advanced that only another year was requisite for its completion. The floods in this instance had been much charged with soil. The water which comes off cultivated land completes the process sooner than that which comes off hill and woodland. Almost the whole of the *Val di Chiana* has been raised by the process of *Colmata*."

The peculiar position of the county of Lincoln offers great facilities for this process of elevation and fertilizing the surface of land. If we look at a map of the county, we find that one half of its somewhat oval contour is bounded by water. The Humber bounds it on the north, the Wash on the south-east, and the open sea on the east; and a very large portion of the district so bounded lies below the level of the sea, being protected from its encroachment by embankments. From the nature of such a soil as this, the rivers which flow through these low lands become charged with a large quantity of mud, and the mode in which this mud deposits itself will depend a good deal on the nature of the river banks. So great is the quantity of mud suspended in the tidal waters of the rivers entering the Wash, that the accumulation of the soil by warping, wherever the force of the winds and currents can be checked, is surprisingly rapid. Thus, for example, when a portion of the old channel of the Ouse, containing eight hundred acres, was deserted by an alteration of the drainage, it was warped up without any artificial aid to the height of twenty-five feet in five or six years.

The waters of the tides that come up the Trent, the Don, the Ouse (there is a Yorkshire river of this name flowing into the Humber, and another of the same name flowing into the Wash at King's Lynn), and other rivers which empty themselves in the estuary of the Humber, are excessively muddy; insomuch that in the summer season, if a cylindrical glass twelve or fifteen inches in height be filled with the water, it will presently deposit an inch of warp or sediment. It is to have this sedimentary matter at command that the process of warping is followed. There must be arrangements for keeping out and letting in water at pleasure; and consequently there must not only be a cut or canal made to join the river, but a sluice at the mouth of it, formed so as to open or shut; and in order that the water may be of a proper depth on the land to be warped, and also prevented from flying over contiguous lands, banks are necessary to be raised around the spot under operation several feet in height. The canal, the sluices, and the embankments are therefore three of the agencies employed in this operation, the waters of the river effecting all the rest. The land is usually divided by the embankments into compartments of from ten to twenty acres each, each having an entrance sluice and one or more return sluices. During the spring-tides, from July to October, the sluice of the canal is opened, the water fills this canal, and then enters by the lateral sluices into all the compartments. When the tide is at its height, all these lateral sluices are closed; and as it ebbs, the pressure of the water in the compartments forces outward the return sluices, and thus the water escapes into the canal, and afterwards into the river, after having deposited a large amount of sediment in each of the compartments where it had been dammed up for several hours. During the intervening hours before the next high tide the mud has time to acquire some degree of consolidation; and this being repeated twice a day for several weeks, a layer of fine soil becomes accumulated in each compartment.

In the year 1825 the Society of Arts voted its large gold medal to a gentleman who forwarded a particular description of a process of warping on a very large scale; and as this well illustrates the general character of the operation, we will give a few of the particulars in a condensed form.

This gentleman, Mr. Creyke, in a letter to the Society, states:—"In the neighbourhood of Rawcliffe House, where I reside, are many thousand acres of peat moss and waste land, which yield scarcely any annual rent, and which I thought (from experience that I had got in improving a considerable quantity of my own land near home) might be improved very much by being warped." With this view Mr. Creyke undertook to warp sixteen hundred acres from the river Ouse. A canal or main drain was cut, two miles and a half in length, reaching from the river to the spot to be warped. This drain was of very large dimensions, being thirty feet wide at the bottom, ninety feet wide at the top, and eleven or twelve feet deep. At the distance of nine feet from its edge on either side was formed an embankment of very solid earth, sixty feet wide at the bottom, and ten feet in height From this central canal the land on both sides was to be overflowed at the warping-season; and the compartments so warped were surrounded by well-formed banks ten feet high, but not so wide or so bulky as those by the side of the main channel. A sluice was formed, with two openings of sixteen feet each, with substantial folding-doors. This sluice was very strongly built; it was formed of stones of large size, backed with brick, and was supported on a floor of wood placed on a series of large piles driven deep in the earth. Numerous inlets were provided in the main embankments, so managed as to admit the water at high tide, retain it for a time, and afford it an outlet at low tide. In the river Ouse, at the point where the sluice was erected, the tides flood for three hours and ebb for nine, and rise from fourteen to eighteen feet. It will be seen from this, therefore, that a vast body of water might be admitted into the canal, and that the sluice required to be strongly built.

In the first year, rather more than four hundred acres of waste land were embanked; and on it was deposited, in the course of that year, a fine alluvial soil of the average depth of near three feet. On the following year the allotment was sown with oats and seeds; and the seeds were afterwards either mown or depastured in the third year. In the fourth year it was sown with wheat, with very profitable results. No part of this allotment of four hundred acres had previously yielded any rent at all; whereas in the fourth year of the operations no part of it let for less than thirty-five shillings per acre. Four months afterwards Mr. Creyke announced to the Society that he had five hundred acres more (in addition to the four hundred in which wheat was growing luxuriantly) in a state of preparation for being sown with oats and grass seed; and that the remaining quantity of six hundred acres would be ready for agricultural operations in the same year.

It is plain from this description that the undertaking was altogether on a large scale, and could not have been carried out without the command of considerable capital. In answer to queries put to him on the part of the Society, Mr. Creyke stated that the sluice and its appendages cost more than five thousand pounds. The expense of the main drain was more than seven thousand pounds, exclusive of the purchase of the land, which was about five thousand pounds; making a total outlay of nearly eighteen thousand pounds. The large drain required considerable annual outlay to keep it in repair; and in the first year an additional expense of a thousand pounds was incurred in consequence of a breach in one of the banks.

In comparing this system of warping with those generally followed, Mr. Creyke remarked:—"The superiority consists in creating a fine deep rich soil, more effectually, upon a larger scale, and in a shorter time, than has hitherto been practised. According to the usual practice, the tides were only admitted during the months of August, September, and October; in mine they are admitted the year round. The sluice was not more than five feet wide, mine has openings of sixteen feet wide. The main drain was only twelve feet wide; mine is ninety feet wide. Not more than fourteen acres were embanked in one piece; I have enclosed five hundred acres in one compartment. Formerly not more than one and a half feet deep of deposit was obtained; I have got from three to four feet in the same time, upon the increased quantity of land. No levels used to be taken for the formation of the banks; the whole of my embankment has been laid out by the spirit level. Scarcely any inlets used to be made for the purpose of spreading the tide water quicker and more equally over the surface of the land within the embankment, as well as for the more speedy return of it upon the ebb; in my practice innumerable inlets are formed for this purpose."

As to the qualities of warped land for the purposes of agriculture, it has been observed that the atmosphere acts powerfully on the newly deposited warp; for before a fresh layer is deposited, which takes place within twelve hours, such an alteration has already taken place on the surface, that the new deposit does not unite in one mass with the last, but a regular stratification can be observed, which shows the quantity deposited in each tide. The new warp also requires to be stirred and exposed to the air for some time before it acquires its great fertility. The richest crops of beans, wheat, oats, and rape are raised without manure on the warp land; but it is not so well adapted for barley or turnips, on account of its slimy nature.

RICE-PAPER AND STRAW-PAPER.

The so-called Chinese *rice-paper* appears, from the inquiries of those who have directed their attention to the matter, to be very erroneously named. The name seems to imply that the substance is made from a pulp of rice, much in the same way as English paper is made from the pulp of rags; but if it be closely examined, and especially if it be held between the eye and a light, it presents all the appearance of a vegetable tissue, so perfect and so delicate that it could not have been produced by art.

Dr. Livingstone was the first to introduce this species of paper into Europe, at least in any considerable quantity, about the beginning of the present century; and it became greatly admired for the beauty of the artificial flowers made of it. It was an item in the gossip of the day, that the Princess Charlotte once paid seventy guineas for a bouquet made of rice-paper. The paper which Dr. Livingstone brought from China was in the form of leaves about four inches square, and which were dyed of different colours. Originally the cost was six shillings a leaf; but it gradually lessened, and the size of the leaves increased, so that they could be procured measuring twelve inches by five.

In 1826 Mr. Reeves, of Canton, communicated to the Society of Arts some information which he had collected concerning the mode of preparing the paper in China; from which it appears that rice-paper is not a manufactured article, but is a vegetable production cut spirally, and afterwards flattened by pressure. The branches of the tree or shrub are first cut into lengths equal to the intended breadth of the sheet of paper, and are placed upon a thick piece of copper, with two raised edges as guides to keep it steady. They are held in the left hand, and presented to the edge of a large sharp knife, about ten inches in length by three in breadth. A slight incision being made in the piece of branch for its whole length, it is kept moving round by the left hand, while the knife is also kept in motion by the right hand; and the branch is thus sliced or pared down from circumference to centre, and then spread out to flatten.

The membranous sheets thus produced are usually made up into bundles of nineteen or twenty each, which weigh about twenty-three ounces, and are sold wholesale for about a dollar a bundle. The refuse pieces are used for making artificial flowers. It is chiefly brought to Canton from the island of Formosa, by the Chinese junks; and hence for a long time arose the difficulty of ascertaining the nature of the plant, for few of the persons concerned in the sale of the prepared article at Canton had ever seen from what it was made.

At a later period General Hardwick communicated some details, which seem to point to the nature of the plant whence these filaments are produced. He says, "I think myself happy to have it in my power to afford you some precise information on the plant which furnishes the substance known under the name of rice-paper. It is the marsh æschynomene, the *æschynomene paludosa* of Roxburgh, of the family of the leguminous plants; and you will find the figure of it in my Atlas of the plants of India. It grows abundantly in the marshy plains of Bengal, and on the borders of the vast lakes called jeels, which exist in all the provinces between Calcutta and Hurdwar. It is a long-lived plant; its stem rarely exceeds two inches and a half in thickness; it is but of little elevation, but spreads considerably. Roxburgh, however, considered it as an annual; but it is only where it wants water that its stems dry up and die; as, where it finds the necessary supply of water, it continues green in all parts, and pushes out new branches every season. The middle of the stem, when broken across, is found to be formed entirely of pith, which is of a dazzling whiteness, and is about half an inch in thickness; this is covered with a bark so thin and tender that it may be easily removed with the finger-nail."

This plant is considered by General Hardwick to be the same as that which yields the Chinese rice-paper. Great quantities of this plant are carried to the bazaars of Calcutta in the fresh state. The largest rods are chosen to be cut into the thin laminæ which constitute the rice-paper, and with which the natives make artificial flowers to decorate their idols on festival days. It is also used to make hats, by glueing together many leaves of it, so as to form it of a sufficient thickness; after which it is formed into the shape of a hat or cap, and covered with cloth or with silk, the membrane forming a very light but strong framework to the hat. Those branches of the plant which will not serve to make this paper are formed into bundles, which are sold to the fishermen, who employ them in making floats for their fishing-lines.

It has been suggested that the pith of elder and other plants might be worked up for similar purposes, by being sliced in this spiral manner into thin sheets, and then flattened by pressure between plates.

The Chinese also make paper from the bamboo. The stalks are cut near the ground, and are sorted into parcels according to the age, and tied up in small bundles. The younger the bamboo, the better is the quality of the paper made from it. The bundles are thrown into a reservoir of mud and water, and buried in the ooze for about a fortnight, to soften them. They are then taken out, cut into pieces of a proper length, and put into mortars with a little water, to be pounded to a pulp with large wooden pestles. After this, the paper is prepared from the pulp in a manner somewhat analogous to the English mode of making paper.

The papyrus of the Egyptians so far resembled the rice-paper of the Chinese that it consisted of filaments, or thin membranes, cut from the stem of a plant. The two extremities of the plant, viz. the head and the root, were cut off as of no use in this manufacture. The remaining stem was then slit lengthwise into two equal parts, and from each of these were stripped off thin scaly coats or pellicles with the point of a sharp instrument. The innermost of these pellicles were looked on as the best, and those nearest the bark or rind the worst; they were kept apart accordingly, and constituted different sorts of paper. When the pellicles were taken off, they were extended on a table. Two or more were then laid transversely over each other, so that their fibres might lie at right angles; and in this state they were glued together by the muddy waters of the Nile. They were afterwards pressed, to get out the water, then dried, and lastly flatted and smoothed, by beating them with a mallet; and they were sometimes further polished by being rubbed with a ball of glass. In other countries, where the muddy waters of the Nile were not at command, the pellicles were fastened together with paste made of the finest wheat-flour mixed with hot water.

It will thus be seen that the difference between the papyrus and rice-paper consisted mainly in this, that each little piece of stem in the latter case forms, when cut spirally, one sheet of paper; whereas, in the former, several pieces are cemented together to form a sheet.

In some degree analogous to these was the bark-paper employed by many nations among the ancients, and still employed by some rude nations. This consisted of the liber, or inner whitish rind enclosed between the outer bark and the wood of certain trees, such as the maple, the plane, the beech, the elm, and the linden-tree. This liber was stripped off, flatted, and dried; and in that state it was used as paper. The bark-paper was thicker and more brittle than the papyrus, as well as more apt to cleave or shiver, by which the writing was sometimes lost. This is illustrated by a bark manuscript in the Abbey of St. Germains, where the bottom of the paper remains, but the outer surface, on which the letters had been written, is in many places peeled off.

Attempts have been made in this country to produce paper from straw. The Neckinger Mills at Bermondsey, now occupied by the leather-dressing establishment noticed in our Supplement for May, 1842, was the scene of the first operations in this respect. The manufactory was afterwards removed to Thames Bank, but proved ultimately a failure. According to the method followed in those establishments, the straw, after being cut up into pieces about two inches in length, was steeped in cold lime-water, and afterwards subjected to the cutting action of the paper-mill. The paper thus produced from straw was harsh and ill-coloured, and never came into general use. There was, however, some years afterwards, another method introduced by other parties, in which rather a complicated chemical process was followed. The straw was first freed from knots, and then boiled in a solution of any of the common alkalis, in order to extract the colouring matter, and to dispose the straw to become fibrous. After being washed, it was exposed to a mixture of quicklime, sulphur, and water, in order to free it from the mucilage and the siliceous particles which exist in all straw. It was then washed and beaten, to remove the odour of the chemical ingredients employed; then bleached by chlorine, or by some other agency; and, lastly, worked up into a pulp as in the common method. It does not seem, however, that paper made of straw by either of these methods, or by any other, has maintained its standing, at least in this country.

The French, some years back, devised a mode of converting to a useful purpose the *boon*, or central stem of the hemp and flax plants. This boom, after the removal of the fibres which form the well-known flax and hemp, is commonly used as manure; but an attempt has been made to work it up into coloured paper. This paper was, however, found to be tender and weak, and has not been much heard of.

Supply of Water to Marseilles.—A highly important hydraulic work has been projected, and is now in rapid progress of execution under the able direction of M. de Montricher. This canal will derive its water from the Durance, near to the suspension bridge at Pertuis, and this will be conducted by open cutting and tunnelling for a distance of fifty-one miles, through a most mountainous and difficult country, until it reaches the arid territory of Marseilles, where it will be employed for the supply of the city, as well as for irrigation, and giving activity to various branches of industry which require water-power. The section and fall of this canal is calculated to pass eleven tons of water per second, and its levels are so disposed that this quantity of water will arrive near to the city, at an elevation of four hundred feet above the level of the sea. Perhaps no work of this description has been attempted either in ancient or modern times more hardy in its conception, or more really useful in its effects. Three chains of limestone mountains are already nearly pierced by the ten miles of tunnels which are required to conduct this stream; and an aqueduct, which is to convey it across the river Arc (about five miles from Aix), is now in construction. Its elevation above the river will be two hundred and sixty-two feet, and its length across the ravine one thousand two hundred and thirty feet. The design for this gigantic structure is in excellent taste, and as a work of art it will not suffer from comparison with the famous Pont du Gard, which it will much surpass both in altitude and size. The estimated cost of this canal is about 450,000*l.*, and this sum is raised by the city of Marseilles without aid from the government. The revenue arising from this work will be principally from supplying water for irrigation, as the value of land in such a climate is quadrupled if water can be so applied to it.—*Murray's Hand-book for Travellers in France.*

Pottery in India.—We were amused here (at Harike) at observing a man making pottery, which he performed in the most simple manner possible. In the centre of a circular hole, two feet and a half deep by as many in diameter, a wooden staff was inserted, and upon this, close to the bottom, but not touching it, was a solid wheel of wood, whilst another of smaller dimensions was fixed nearer to the top. The whole of this apparatus was planted perpendicularly into the ground, and the man, sitting on the edge of the cavity, worked the larger wheel with his foot, whilst with his hand he moulded the clay placed on the smaller one (which was turned with the former) into whatever form he required. We saw him construct a utensil somewhat in the shape of a flower-pot, and he finished it in a very neat manner in less than five minutes. The poor fellow, who was miserably clad, complained bitterly of the cold; but this was not to be wondered at, for, independent of his ragged costume, he had to dip his hands into water every fifteen or twenty seconds, and the weather was very much inclined to be more than chilly in its influence.—*Lieut. W. Barr's Journal of a march from Delhi to Peshawur, &c.*